

CLM PTO 09/15/04

1. (Amended) A method for making a polymer or oligomer comprising the steps of:
 - (a) making a first monomer comprising a substituted aromatic or heteroaromatic group by:
 - (i) providing an aromatic or heteroaromatic group substituted with first and second director groups;
 - (ii) performing metalation at a first position on the aromatic or heteroaromatic group; and,
 - (iii) performing electrophilic substitution so as to provide a first substituent group at the first position; and
 - (b) contacting in a reaction mixture the first monomer with at least two further monomers that independently are the same or different from the first monomer under conditions so as to form a polymer or oligomer;
wherein the nature and positions of the first and second director groups regioselect the first position.

2. A method according to claim 1, wherein step (a) further comprises:
 - (iv) performing metalation at a second position on the aromatic or heteroaromatic group; and
 - (v) performing electrophilic substitution so as to provide a second substituent group at the second position;
wherein the nature and positions of the first and second director groups regioselect the second position.

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3. (Amended) A method according to claim 1, wherein the first and/or second substituent group independently are selected from the group consisting of halide, $B(OH)_2$, $B(OR)_2$, organo stannane, alkoxy, alkoxyalkyl, alkyl, hydroxide, aryl, heteroaryl, silyl, triflate and amide, and $COCF_3$.

4. A method according to claim 3, wherein the first and/or second substituent groups independently are selected from the group consisting of Br , I , $SiMe_2C_8H_{17}$, $SiMe_2C_{10}H_{21}$, and $SiMe_3$.

5. (Amended) A method according to claim 1, wherein metalation is performed by the addition of organo-lithium.

6. (Amended) A method according to claim 1, wherein the nature and positions of the first and second director groups regioselect the first position to be ortho to the first director group.

7. (Amended) A method according to claim 2, wherein the nature and positions of the first and second director groups regioselect the second position to be ortho to the second director group.

8. (Amended) A method according to claim 1, wherein the first and second director groups are the same or different and independently are selected from alkoxy, alkoxyalkyl, amide, halide, haloalkyl, amino, aminoalkyl, carboxylic acid ester, urethane, carbamate, sulphonamide, sulphurylalkyl, and carbamide groups.

9. A method according to claim 8, wherein the first and second director groups are the same or different and independently are selected from the group consisting of $CONEt_2$, $CONHCMe_2Ph$, $OCONMeCMe_2Ph$, $OCONEt_2$, SO_2NHCMe_2Ph , and SO_2-tBu .

10. (Amended) A method according to claim 1, wherein the first and second director groups are different.

11. (Amended) A method according to claim 1, wherein the first and second director groups are the same.

12. (Amended) A method according to claim 1, wherein the aromatic or heteroaromatic group is selected from a phenylene, fluorene, anthracene and naphthalene groups.

13. (Amended) A method according to claim 1, wherein step (a) further comprises a step (vi) of independently converting into a reactive group one or both of the director groups and/or one or both of the first and second substituent groups to form a monomer having two reactive groups that participate in polymerisation.

14. A method according to claim 13 wherein the two reactive groups are para to one another.

15. (Amended) A method according to claim 13, wherein each director group independently is converted to a phosphonate, a carbonyl, a triflate or a halomethyl group.

16. A method according to claim 15, wherein the polymer or oligomer comprises an arylene vinylene repeat unit that is derived from the first monomer.

17. A method according to claim 16, wherein the arylene vinylene unit comprises a phenylene vinylene group.

18. (Amended) A method according to claim 13, wherein each substituent group independently is converted to a halide group.

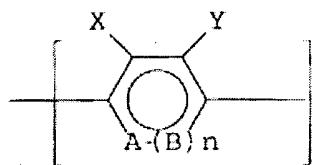
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19. A method according to claim 18, wherein the polymer or oligomer comprises a phenylene repeat unit that is derived from the first monomer.

20. (Amended) A polymer or oligomer prepared in accordance with the method of claim 1.

21. (Amended) A polymer or oligomer preparable in accordance with the method of claim 1, having a repeat unit comprising an aromatic or heteroaromatic group with first and second linked positions and first and second director groups X and Y where X is ortho to the first linked position and Y is ortho to the second linked position and where X and Y are the same or different and independently comprise a hydroxyl, alkoxy, alkoxyalkyl, amide, halide, haloalkyl, amino, aminoalkyl, carboxylic acid ester, urethane, carbamate, sulphonamide, sulphurylalkyl, or carbamide group; and A is C, O, S or NR and n = 0; or A is C or NR, B is C or NR and n=1; and R is a pendant group.

22. (Amended) A polymer or oligomer according to claim 21, comprising a group having general formula I:



(I)

23. (Amended) A polymer or oligomer according to claim 22 having a repeat unit comprising an aromatic or heteroaromatic group comprising a group having general formula II:



(II)

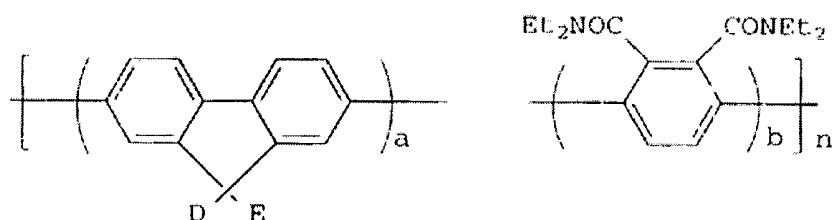
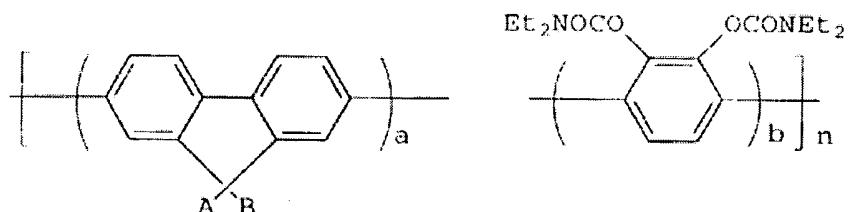
24. (Amended) A polymer or oligomer according to claim 21 wherein the first and second director groups are the same or different and independently are selected from the

group consisting of CONEt₂, CONHCMe₂Ph, OCONMeCMe₂Ph, OCONEt₂, SO₂NHCMe₂Ph, and SO₂-tBu.

25. (Amended) A polymer or oligomer according to claim 21 which is a luminescent polymer or oligomer.

26. A polymer or oligomer according to claim 25 having a bandgap in the range 1.5 eV to 3.5 eV.

27. (Amended) A polymer or oligomer according to claim 26 having general formula:

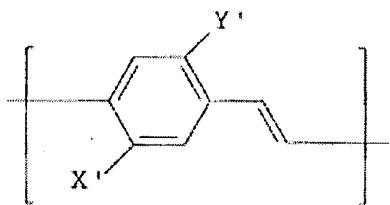


where D and E are the same or different and are each H, alkyl, cyclo-or branched-alkyl; n is in the range from 2 to 100 and $1 < a < 10$ and $1 < b < 10$.

28. (Amended) A polymer or oligomer preparable in accordance with the method of claim 1 having a repeat unit comprising a substituted or unsubstituted vinylene group and an aromatic or heteroaromatic group having first and second silyl substituent groups X' and Y' that are different from each other where X' is ortho to a first linked position and Y' is ortho to the vinylene group.

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29. (Amended) A polymer or oligomer according to claim 28, having a repeat unit comprising the group shown in general formula III:



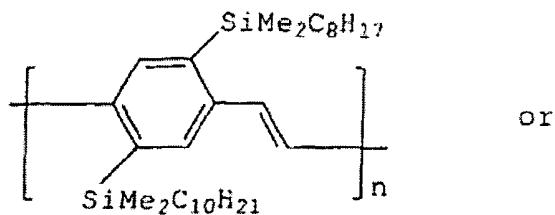
(III)

30. (Amended) A polymer or oligomer according to claim 28, where X' is SiR₁R₂R₃ and Y' is SiR'₁R'₂R'₃ and R₁, R₂, R₃, R'₁, R'₂, and R'₃ independently is alkyl or cycloalkyl.

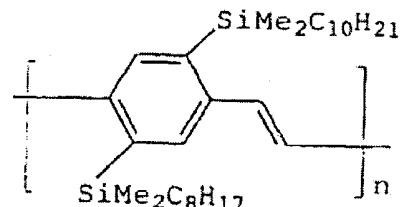
31. A polymer or oligomer according to claim 30, where X' and Y' each independently is SiMe₂C₁₀H₂₁ or SiMe₂C₈H₁₇.

32. (Amended) A polymer or oligomer according to claim 28 which comprises a homopolymer.

33. A polymer or oligomer according to claim 32 comprising a homopolymer having the formula:



or

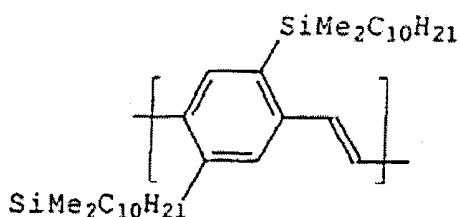


where n is from 4 to 200.

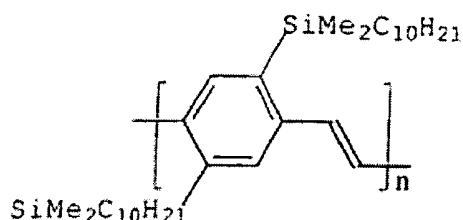
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34. (Amended) A polymer or oligomer preparable in accordance with the method of claim 1 having a repeat unit comprising an unsubstituted vinylene group and an aromatic or heteroaromatic group having first and second $\text{SiMe}_2\text{C}_{10}\text{H}_{21}$ substituent groups where the first substituent group is ortho to a first linked position and the secord substituent group is ortho to the vinylene group.

35. A polymer or oligomer according to claim 34, having a repeat unit:



36. A polymer or oligomer according to claim 35, comprising a homopolymer having the formula:



where n is from 4 to 200.

37. (Amended) A polymer or oligomer according to claim 28 which is a luminescent polymer or oligomer.

38. A polymer or oligomer according to claim 37 having a band gap in the range 1.5 eV to 3.5 eV.

39. (Amended) An optical device or a component therefor, which comprises a substrate and a polymer as defined in claim 20 supported on a substrate.

40. (Amended) An optical device or component therefor comprising:
an anode;
a cathode; and,

a light-emissive layer located between the anode and the cathode for accepting and combining positive and negative charge carriers to generate light;

wherein the light-emissive layer comprises a polymer or oligomer as defined in claim 20.

41. An optical device or a component therefor according to claim 40, wherein the optical device comprises an electroluminescent device.

42. (Amended) An optical device comprising a polymer or oligomer as defined in claim 20.

43. (Amended) An electroluminescent device comprising the optical device of claim 42.

44. (Amended) A light-emissive material comprising a polymer or oligomer as defined in claim 20.

45. (Amended) A method for making an optical device or component therefor comprising the steps of:

- (a) providing a polymer or oligomer as defined in claim 20; and
- (b) including the polymer or oligomer in an optical device or component therefor.